Web appendix 3: Per protocol criteria

For the Per Protocol (PP) analyses, participants were allocated to trial arms retrospectively based on the treatment they received during the course of the trial. Additionally, two sets of criteria were applied to determine whether a whole case or data from a particular follow-up assessment (i.e. short term (ST) or long term (LT)) should be excluded from the PP analyses. The first set of criteria principally applied to PP intervention participants and was used to select only those participants who had received appropriate telehealth (TH) devices at the appropriate time (relative to baseline assessment). A second set of criteria was applied to both trial arms and was used to select participants who completed the ST and LT assessments within explicitly defined time frames (relative to trial start date).

Retrospective allocation of participants to trial arms

Prior to the application of the PP criteria, all participants were allocated to the 'PP trial arm' based on whether they had received TH devices. Cases that had received *any* TH devices were allocated to the intervention arm; cases that had received no TH devices were allocated to the control arm. The trial Start Date was the date that the TH equipment was installed or activated (whichever was the latest) for intervention participants, or the date of that the baseline questionnaire was completed for control participants.

Per protocol selection criteria 1 (violation leads to removal of the case from all PP analyses)

1. If TH devices were installed in a participant's home > 14 days before the baseline questionnaire was completed the case was removed from all PP analyses. This criterion was applied to remove cases where long exposure to TH may have influenced responses on the baseline assessment.

2. If a participant was allocated to the PP intervention arm because they had received *some* TH device(s) but did not receive at least one 'critical' device for a diagnosed condition (i.e. COPD, diabetes, HF) then the case was removed from all PP analyses. For current purposes the critical devices were considered to be: a pulse oximeter for chronic obstructive pulmonary disease (COPD), a glucometer for diabetes and weighing scales for heart failure (HF). Participants with two or three conditions only needed to have received a single critical TH device to be included in the PP analyses. This criterion was applied to remove cases where the TH they received was mismatched to their diagnosed condition(s).

3. If a participant had telecare *and* telehealth devices installed then the case was removed from all PP analyses. This criterion was applied to remove cases whose outcomes at follow-

up assessments would be influenced by two different types of advanced assistive technology as, for current purposes, we were interested in isolating the effects of TH only.

4. If a control or intervention participant withdrew from the trial on or before their trial Start Date, or if an intervention participant asked to have the TH equipment removed on the same day that it was (due to be) installed, then the case was removed from all PP analyses.

Per protocol selection criteria 2 (violation leads to deletion of selected follow-up questionnaire data)

i. For all participants (control and intervention), if the ST questionnaire was completed less than 60 or greater than 180 days after the trial Start Date then all ST questionnaire data was deleted for the case. This criterion was applied to remove ST assessment data that was completed excessively early or excessively late (relative to the ST median) since outcomes may be a function of time and too much heterogeneity in this regard could obfuscate relationships in the data.

ii. For PP intervention participants, if exposure to TH at ST assessment was less than 60 days or greater than 180 days then all ST questionnaire data was deleted for the case. This is similar to the preceding criterion but it was necessary to apply this additional criterion as TH devices were not always installed on the trial Start Date. Too much heterogeneity in terms of exposure to TH could obfuscate relationships with outcome variables for the intervention group.

iii. For all participants (control and intervention), if the LT questionnaire was completed less than 300 days or greater than 420 days after the trial Start Date, then all LT questionnaire data was deleted for the case. This criterion was applied to remove LT assessment data that was completed excessively early or excessively late (relative to the LT median).

iv. For PP intervention participants, if exposure to TH at LT assessment was less than 300 days or greater than 420 days then all LT questionnaire data was deleted for the case.